

THYSANOPTERA (INSECTA) FROM THE 1985 AND 1986 ZOOLOGICAL EXPEDITIONS
TO THE KRAKATAUS, INDONESIA

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Abstract

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The Thysanoptera collections of the La Trobe University/LIPI 1985 and 1986 Zoological Expeditions to the Krakatau islands in the Sunda Strait, Indonesia, include 26 species. Two species are described as new and figured: *Mymarothrips bicolor* sp. nov., and *Apollothrips karnyi* sp. nov. A further five species are recorded from Indonesia for the first time: *Anisopilothrips venustulus* (Priesner), *Apollothrips bhattii* Wilson, *Panchaethrips holtmanni* Wilson, *Plectrothrips eximius* Ananthakrishnan, and *Strepterothrips orientalis* Ananthakrishnan.

Introduction

The 1985 and 1986 Zoological Expeditions to the Krakataus in the Sunda Strait, Indonesia, during August (1985) and September (1986), were carried out by zoologists from Indonesian and Australian institutions. A general introduction to the 1984 and 1985 expeditions was provided by Thornton and Rosengren (1988). A report on the Thysanoptera collected on the 1984 expedition was presented by zur Strassen (1991).

About two dozen samples of thrips (Thysanoptera) were collected in 1985, and four samples in 1986. One 1984 sample is included in the present paper.

The thysanopterans were obtained mainly by beating and sweeping vegetation, and in a few cases by Malaise traps. Many specimens are damaged, several of them have the antennae or parts of them broken off. Therefore, not all specimens have been identified to species.

Material is deposited in the Lembaga Ilmu Pengetahuan Indonesia (LIPI), the Forschungsinstitut Senckenberg at Frankfurt am Main, Germany (SMF) and the Museum of Victoria, Melbourne, Australia (NMV).

The species dealt with below are arranged systematically under families. Within these the genera are arranged alphabetically as are the species under each genus.

Aeolothripidae

Mymarothrips bicolor sp. nov.

Figure 1

Material examined. Holotype: Krakataus, Panjang I.,

by sweeping (235-D2B), 17 Aug 1985, LIPI (female).

Paratype: Krakataus, Sertung I., by beating twigs in forest (244-CS), 18 Aug 1985, SMF (1 female).

Diagnosis. Head about as long as broad. Body 2-coloured, anterior part of body largely pale yellow, abdominal segments V-X brown to dark brown, margins of head darkened; forewings white in proximal half, brown in distal half with large circular colourless apical patch; dorsal setae on abdominal segments IX and X yellowish.

Description (female macropterous). Total length (distended) 1470-1550 μ m. Head between the eyes yellow, anterior margin and cheeks as deep as eyes width brown, mouth cone yellow; antennae dark brown, segments I and VII-IX a trifle paler. Pronotum yellow with lateral margins brownish, setae pale. Pterothorax and abdominal segments I-III pale yellow, segment III with small pale brown spot near lateral margin just behind subbasal transverse line, segment IV pale brown mottled posteriorly or laterally, otherwise yellow, segments V-VII coloured as in IV, or uniformly brown, segment VIII somewhat darker than VII or even dark brown as abdominal segments IX and X; setae on latter 2 segments yellowish. Legs pale yellow. Forewings (Fig. 1) white in proximal half including veins, setae and scapus, brown in distal half except for large circular white patch almost at apex, vein setae in this part dark brown; hindwings similarly coloured, but the brown of a slightly paler tinge and the white patch not as clearly margined as in forewing.

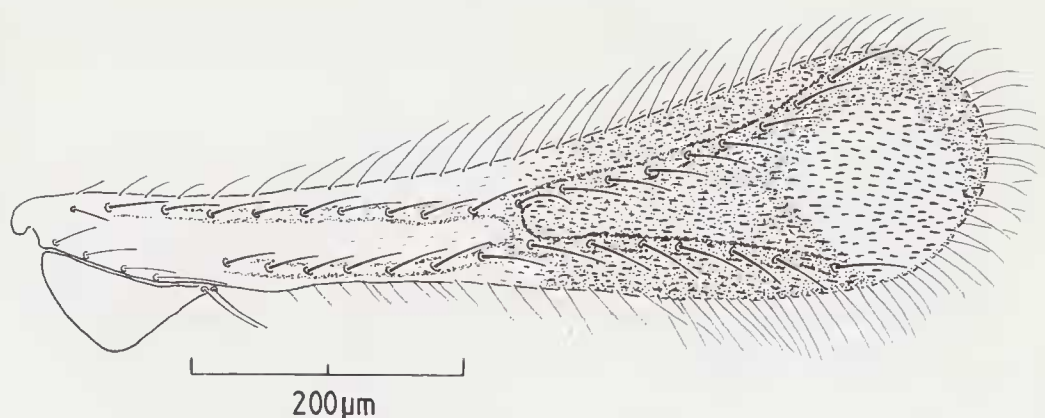


Figure 1. *Mymarothrips bicolor* sp. nov., holotype female, LIPI (right fore wing showing the colour pattern as seen by means of phase contrast. Drawn by Andrea Vesmanis.

Head about as long as broad, ante-ocular seta dark brown, 38–41 μm long, other head setae pale. Length in μm of antennal segments of holotype: I 31, II 49, III 84, IV 64, V 59, VI 54, VII 57, VIII 19, IX 17. Pronotum 139–154 μm long, 178–205 μm broad, subanteromarginal setae as long as or somewhat longer (57–69 μm) than anteromarginals (51–56 μm), posteroangular setae 74–86 μm long. Pterothorax 300–318 μm long, 270–298 μm broad; hind tibia 218–230 μm , hind tarsus 103–115 μm long. Forewing 820–880 μm long, across middle 107–115 μm broad, before apex 192–215 μm broad, distance between anterior and posterior vein at crossvein 17–23 μm , apical setae of posterior vein 63–75 μm long. Abdominal segments IX+X together 225–240 μm long, width across base of segment IX 146–161 μm ; segment IX with seta S_1 126–129 μm , S_2 138–149 μm , dorsal seta 86 μm long, segment X with seta S_1 115–121 μm long. Sternite VI with 4–6, sternite VII with 10–13 accessory setae. Ovipositor 355–375 μm long.

Discussion. The new species *M. bicolor* is readily distinguished from its congeners by the colouration. The type species, *M. ritchianus* Bagnall (1928) from the Ethiopian region, is a generally pale species with orange and red internal pigmentation; pterothorax at lateral margin, meso- and metasternum, abdominal segments I, distal half of IX and all of X are yellowish brown; the forewing is very pale brownish at its base, the third and fourth fifth has a slightly darker tinge at the level of the cross vein between anterior and posterior vein, and across the broadest part of the wing. The two species from the Oriental region, *M. bolus* Bhatti, 1967 and *M. garuda*

Ramakrishna and Margabandhu, 1931 are much darker than the new species and have dark setae all along the veins of the forewing, the costa of which is dark in its total length.

Thripidae

Anisopilothrips venustus (Priesner)

Heliothrips venustus Priesner, 1923: 89.

Anisopilothrips venustus. — Stannard and Mitri, 1962: 187.

Material examined. Krakatau: Panjang I., by sweeping (164-N), Sep 1984, LIPI (1 female).

Distribution. Perhaps of Caribbean origin, introduced to many subtropical and tropical islands and several countries near the sea; foliicolous. Not previously recorded from Indonesia.

Apollothrips bhattii Wilson

Apollothrips bhattii Wilson, 1972: 52.

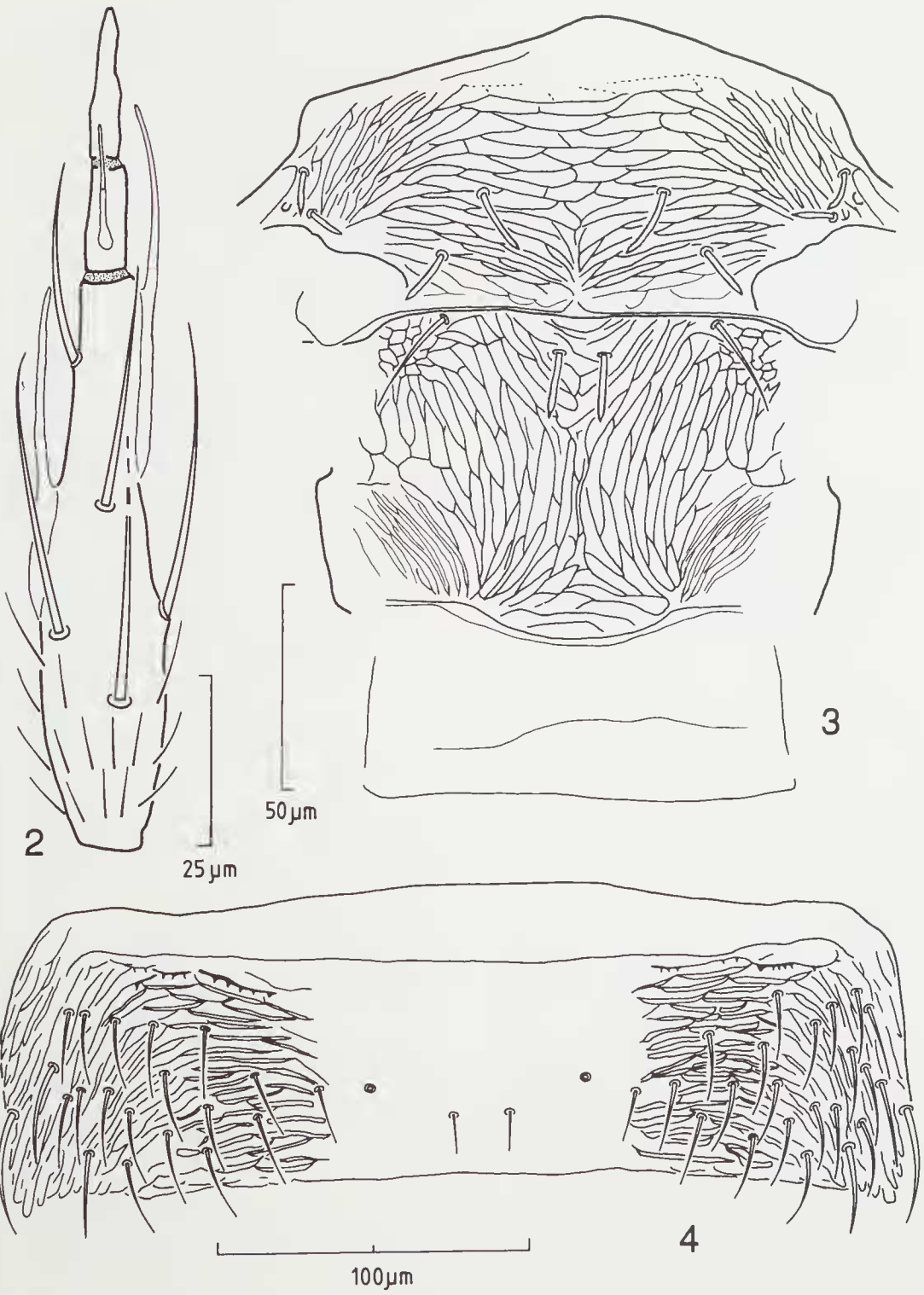
Material examined. Krakatau: Panjang I., by sweeping (164-N), Sep 1984, LIPI (1 female); Panjang I., by sweeping (330-CE), 25 Sep 1986, SMF (1 male). Sertung I., Spit, by beating in the transition zone (244-HM), NMV (1 female), and by sweeping in forest (245-L2C), both 18 Aug 1985, LIPI, SMF (2 females); Panjang I., South Ridge, by sweeping in forest (340-DD), 27 Sep 1986, NMV (1 female).

Distribution. Until now known only from the type series from Madhya Pradesh, India; perhaps living on ferns.

Apollothrips karnyi sp. nov.

Figures 2–4

Material examined. Holotype: Krakatau, Sertung I.,



Figures 2-4. *Apollothrips karnyi* sp. nov., holotype female (LIPI). 2, antenna segment VI dorsally; 3, meso- and metanotum; 4, tergite VI. Drawn by Andrea Vesmanis.

Material examined. Krakatau: Rakata I., Owl Bay, by sweeping from low coastal vegetation (225-J1), 25 Aug 1985, LIPI (1 male). Anak Krakatau I., West shore, from Malaise trap (313-EM), 24 Sep 1986, NMV (1 male). Sertung I., South Ridge, by sweeping in forest (340-DD), 27 Sep 1986, LIPI, SMF (2 males).

Distribution. Japan, Taiwan, Sumatra, Java, Vanuatu (= New Hebrides), Tonga; floricolous.

Panchaethrips holtmanni Wilson

Panchaethrips holtmanni Wilson, 1975: 186.

Material examined. Krakatau: Panjang I., by sweeping low vegetation (235-EU), 16 Aug 1985, LIPI (1 female); Panjang I., NE shore, by sweeping (235-BH), 17 Aug 1985, SMF (1 female). Sertung I., South Ridge, by sweeping in forest (340-DD), 27 Sep 1986, NMV (1 female).

Distribution. Until now known only from the type material from New Guinea; foliicolous.

Remarks. The three specimens are regarded as belonging to *P. holtmanni* because of the forked sense cones on antennal segments III and IV (not mentioned in the original description because only segments I and II are present in the type specimens); the weak and pale seta S_1 on hind margin of tergite II which is about half as long as seta S_2 (not as strong and long as); the subbasal (antecostal) line on tergites II–VIII with many posteriorly directed small notches; and the discal campaniform sensilla on metanotum being separated by more than two of their own diameters. However, in none of the specimens dealt with is there a minute seta midway between the posterior ocelli and the eyes as has been described for the type specimens.

Scirtothrips dorsalis Hood

Scirtothrips dorsalis Hood, 1919: 90.

Material examined. Krakatau: Anak Krakatau I., from Malaise trap at outer cone (213-SJ), 18 Aug 1985, LIPI (1 female); Anak Krakatau I., from Malaise trap NE foreland (213-PK), 19 Aug 1985, SMF (1 male).

Distribution. From Japan, New Guinea, the Solomons and Australia, westward to Pakistan, also S. Africa (perhaps introduced); floricolous/foliicolous.

Selenothrips rubrocinctus (Giard)

Physopus rubrocincta Giard, 1901: 264.

Selenothrips rubrocinctus. — Hood, 1913: 150.

Material examined. Krakatau: Anak Krakatau I., by beating broad leaved plants (214-FD), LIPI, SMF,

NMV (7 females), and by another beating broad leaved plants (214-GG), 21 Aug 1985, LIPI (1 female).

Distribution. Circum-subtropical and -tropical; foliicolous.

Thrips hawaiiensis (Morgan)

Euthrips hawaiiensis Morgan, 1913: 3.

Thrips hawaiiensis. — Priesner, 1934: 266.

Material examined. Krakatau: Anak Krakatau I., from Malaise trap on outer cone (213-SJ), 18 Aug 1985, LIPI (1 female).

Distribution. Southern States of USA, Pacific, Japan, Oriental Region; floricolous, polyphagous.

Zonothrips karnyi Priesner

Zonothrips karnyi Priesner, 1926: 260.

Material examined. Krakatau: Anak Krakatau I., by sweeping (215-EL), 22 Aug 1985 (LIPI), 1 female.

Distribution. Indonesia (Java); recently recorded from Rakata I. (zur Strassen, 1991).

Phlaeothripidae

Ecacanthothrips tibialis (Ashmead)

Idolothrips tibialis Ashmead, 1905: 20.

Ecacanthothrips tibialis. — Palmer and Mound, 1978: 156.

Material examined. Krakatau: Panjang I., by sweeping low vegetation (235-EU), 16 Aug 1985, LIPI (2 females). Rakata I., Owl Bay, by sweeping low coastal vegetation (225-J1), 25 Aug 1985, NMV (1 female).

Distribution. Indo-Australian Region, Japan, Mauritius, Rodrigues I., Tanganyika; fungivorous.

Elaphrothrips curvipes Priesner

Elaphrothrips curvipes Priesner, 1929: 206.

Material examined. Krakatau: Sertung I., Spit, by beating in *Casuarina* forest (244-AN), LIPI (1 male and 3 females), same locality, by beating a *Casuarina* tree (244-IO), NMV (1 male), and by sweeping understorey in *Casuarina* forest (245-AH), LIPI (1 female), all 18 Aug 1985. Anak Krakatau I., by beating broad leaved plants (214-FD), LIPI, SMF (2 males and 1 female), and by another beating broad leaved plants (214-GG), NMV (1 male and 1 female), all 21 Aug 1985.

Distribution. Southeast Asia inclusive of Indonesia; fungivorous.

South Ridge, by sweeping in forest (340-DD), 27 Sep 1986, LIPI (female).

Diagnosis. Mouth cone 1.7 times as long as pronotum; discal setae on pronotum thin, not thickened; mesonotum in median third with sculpture of anastomosing transverse lines; tergites II–VII smooth in median part between the 2 setae S_2 , no transverse lines around area of setae S_1 , discal campaniform sensilla on tergites IV–VIII situated further cephalad than setae S_1 .

Description (female macropterous). Total length (distended) 1520 μm . Head, pro- and pterothorax dark greyish brown, metanotum along midline with narrow longitudinal paler area, tergites medially and sternites grey brown, tergites fading laterad to almost white. Antennae dark brown, segments IV–VI immediately behind their basal margin each with narrow, transverse whitish band. Legs pale yellow; wings brown or greyish brown. Body setae pale brown, those on abdominal segments IX and X dark brown.

Head about 1.4 times as broad (160 μm) as long (115 μm). Dorsal surface densely sculptured with anastomosing transverse lines, setae short, not longer than 18 μm . Mouth cone almost pointed, 220 μm long, surpassing hind margin of pronotum, maxillary palpi 69 μm long. Antennae about 410 μm long (length of segments II and III in the unique specimen not exactly to measure), segments III and IV bottle-shaped, each with stout, forked sense cone with 57–63 μm long branches. Inner and outer sense cone on segment VI (Fig. 2) arising from long linear base, that of the inner cone 17 μm , that of the outer cone 29 μm long, the free distal part of the inner cone 31 μm , that of the outer cone 26 μm long.

Pronotum 155 μm long, 161 μm broad across anterior margin, 212 μm broad across widest part; surface with often anastomosing transverse lines of which 40 cross the longitudinal midline, and with about 60 short discal setae which are not thickened; hind margin without pronounced setae. Pterothorax 298 μm long, 270 μm broad. Mesonotum (Fig. 3) in its median part with same type of sculpture as on pronotum; metanotum without campaniform sensilla. Hind tibia 200 μm long; forewings slender, 875 μm long, 98 μm broad across scapus, 38 μm across middle, anterior vein with 3+6 (-7) subbasal setae and 2 distal setae, latter very close to tip of wing, posterior vein with 20 setae.

Abdominal tergites II–VII smooth in whole area between the 2 setae S_2 (see Fig. 4), no short

transverse lines around setae S_1 ; discal campaniform sensilla on tergites IV–VII situated further cephalad than setae S_1 ; lateral parts of tergites with 12–20 setae laterad of seta S_2 ; ctenidia wanting. Abdominal segments IX+X together 161 μm long, dorsally without sculpture, seta S_1 on IX 69 μm , S_2 75 μm , dorsal seta 55 μm long, seta S_1 on X 92 μm , S_1 77 μm long. Ovipositor 260 μm long.

Etymology. The species is dedicated to Prof. Dr. H. Karny (1886–1939), the famous entomologist who for decades studied the Indonesian Thysanoptera.

Discussion. The new species *A. karnyi* is separated from *A. bhattii* Wilson, 1972, hitherto the only known species in the genus, by the longer mouth cone (220 μm ; in *A. bhattii* 140–160 μm); by the normal shape of the discal setae on pronotum (not being stout and thickened); by the different sculpture of the mesonotum where the transverse lines are often anastomosing (instead of hardly anastomosing and running very closely); by the smooth median part of tergites II–VII between the setae S_1 (instead of short transverse lines around the setae S_1); by the location of the discal campaniform sensilla on tergites IV–VIII, situated further cephalad than setae S_1 (instead of further caudad, as in *A. bhattii*).

Astrothrips globiceps (Karny)

Heliethrips globiceps Karny, 1913a: 125.

Astrothrips globiceps. — Karny, 1923: 331.

Material examined. Krakatau: Sertung I., South Ridge, by sweeping in forest (340-DD), 27 Sep 1986, LIPI (1 female).

Distribution. Melanesia to southeast Asia; foliicolous. Just recently recorded from Sertung I. and Rakata I. (zur Strassen, 1991).

Dorcadothrips trifasciatus (Priesner)

Taeniothrips trifasciatus Priesner, 1936: 323.

Dorcadothrips trifasciatus. — Bhatti, 1978: 169.

Material examined. Krakatau: Rakata I., Owl Bay, from Malaise trap (223-AJ), 27 Aug 1985 (LIPI), 1 female.

Distribution. This is the first record of the species since its description from Sumatra, Wai Lima (Lampongs); perhaps foliicolous.

Megalurothrips formosae (Moulton)

Taeniothrips formosae Moulton, 1928: 298.

Megalurothrips formosae. — Bhatti, 1969: 241.

Ethirotrips stenomelas (F. Walker)

Phloeothrips stenomelas Walker, 1859: 224.
Ethirotrips stenomelas. — Mound and Palmer, 1983: 57.

Material examined. Krakatau: Panjang I., by sweeping low vegetation (235-EU), 16 Aug 1985, LIPI (1 female).

Distribution. Pacific, Indo-Australian Region, India, Madagascar; sporophagous.

Haplothrips certus Priesner

Haplothrips certus Priesner, 1929: 194.

Material examined. Krakatau: Anak Krakatau I., from Malaise trap on outer cone (213-SJ), 18 Aug 1985, LIPI (1 male).

Distribution. New Guinea, S. China, Taiwan, Sumatra, Mentawai Archipelago; on Cyperaceae.

Haplothrips ganglbaueri Schmutz

Haplothrips ganglbaueri Schmutz, 1913: 1034.

Material examined. Krakatau: Anak Krakatau I., by beating grasses (214-EF), 21 Aug 1985, LIPI (1 female).

Distribution. West Pacific, Oriental Region; graminicolous.

Holurothrips ornatus Bagnall

Holurothrips ornatus Bagnall, 1914b: 376.

Material examined. Krakatau: Panjang I., by sweeping low vegetation (235-EU), 16 Aug 1985, LIPI (1 female).

Distribution. Oriental Region; sporophagous.

Machatothrips antennatus (Bagnall)

Adiaphorothrips antennatus Bagnall, 1915: 594.
Machatothrips antennatus. — Mound, 1968: 133.

Material examined. Krakatau: Rakata I., S. Face, by beating (224-GL), 25 Aug 1985 (LIPI), 1 male.

Distribution. S. China, Malaya, Singapore, W. Sarawak, Indonesia; sporophagous.

Meiothrips menoni Ananthakrishnan

Meiothrips menoni Ananthakrishnan, 1964b: 99.

Material examined. Krakatau: Panjang I., by sweeping low vegetation (235-EU), 16 Aug 1985, LIPI (1 male).

Distribution. Oriental Region; sporophagous.

Nesothrips brevicollis (Bagnall)

Oedemothrips brevicollis Bagnall, 1914a: 29.
Nesothrips brevicollis. — Mound, 1968: 140.

Material examined. Krakatau: Panjang I., by sweeping (164-N), Sep 1984, LIPI (1 female-brachypterous). Sertung I., Spit, by beating in *Casuarina* forest (244-AN), 18 Aug 1985, LIPI, SMF, NMV (1 male-macropterous, 1 female-macropterous and 1 female-brachypterous); same island, forest, by sweeping (245-L2C), 19 Aug 1985, SMF (1 male-hemimacropterous). Anak Krakatau I., by beating from broad leaved plants (214-FD), 21 Aug 1985, LIPI, NMV (1 female-macropterous and 1 female-brachypterous).

Distribution. Old World tropics and subtropics; sporophagous.

Nesothrips lativentris (Karny)

Rhaebothrips lativentris Karny, 1913b: 129.
Nesothrips lativentris. — Pound and Palmer, 1983: 48.

Material examined. Krakatau: Sertung I., Spit, by beating in the transition zone (244-BP), 18 Aug 1985, LIPI (1 male-brachypterous). Anak Krakatau I., by beating broad leaved plants (214-GG), 21 Aug 1985, LIPI, NMV (1 female-macropterous and 1 female-brachypterous).

Distribution. Old and New World tropics; sporophagous.

Plectrothrips eximius Ananthakrishnan

Plectrothrips eximius Ananthakrishnan, 1969: 296.

Material examined. Krakatau: Rakata I., Owl Bay, from Malaise trap (223-AJ), 27 Aug 1985, LIPI (1 female). Anak Krakatau I., from Malaise trap (313-CN), 24 Sep 1986, SMF (1 female).

Distribution. Described from a unique female from Madras, S. India; fungivorous. Okajima (1981: 319) gave an additional record from Singapore.

Remarks. The two specimens from the Krakatau differ to some extent from the type specimen but nevertheless are regarded as belonging to *P. eximius*. The body colour is uniform dark, there are no yellow tinged portions, even the legs are dark brown, only the distal parts of the tibia are somewhat paler, the tube has a tinge of red.

Pygothrips vicinus Okajima

Pygothrips vicinus Okajima, 1990: 97.

Material examined. Krakatau: Sertung I., Spit, by

beating in *Casuarina* forest (244-AN), 18 Aug 1985, LIPI, SMF, NMV (6 females).

Distribution. Ryukyu Islands (Japan), Java, Thailand; sporophagous.

Remarks. The epimeral suture is complete in these six females whereas it is described as incomplete in the type material.

Streptothrips orientalis Ananthakrishnan

Streptothrips orientalis Ananthakrishnan, 1964a: 118.

Material examined. Krakataus: Anak Krakatau I., from Malaise trap (313-CN), 24 Sep 1986, LIPI (1 female-macropterous).

Distribution. Hawaii, Fiji, Taiwan, Thailand, S. India. Not previously recorded from Indonesia.

Streptothrips mirabilis Priesner

Streptothrips mirabilis Priesner, 1932: 58.

Material examined. Krakataus: Scrtung I., Spit, by beating in *Casuarina* forest (244-AN), 18 Aug 1985, LIPI (1 female).

Distribution. This is the first record of the species since its description from Sumatra, Wai Lima (Lampongs).

Discussion

In a first report (zur Strassen, 1991) on Thysanoptera recently collected from the Krakataus 25 species were recorded from the 1984 Expedition to this island group in the Sunda Strait. The second report on newly submitted material deals with 26 species mostly taken on the 1985 Expedition to the archipelago. The new material contains a further 15 species not previously recorded from the Krakataus; eight of these species are also additions to the known fauna of Indonesia, of which two species are even newly described (*Mymarothrips bicolor* sp. nov., *Apollothrips karnyi* sp. nov.). Two species are recorded here for the first time since they were described long ago, i.e. *Doreadothrips trifasciatus* Priesner, 1936 and *Streptothrips mirabilis* Priesner, 1932.

Fourteen (58%) of the species are represented by only a single specimen. The corresponding percentage for the 1984 material was 36%.

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Appendix

Synopsis of the Thysanoptera species from the 1984–1986 Zoological Expeditions to the four Krakatau islands in the Sunda Strait, Indonesia. (For records from the 1984 Expedition, see zur Strassen 1991.)

	Anak Krakatau	Panjang	Rakata	Sertung
Aeolothripidae				
<i>Mymarothrips bicolor</i> sp.nov.		+		+
Thripidae				
<i>Anisopilothrips venustulus</i> (Priesner)		+		
<i>Apollothrips bhattii</i> Wilson		+		+
<i>Apollothrips karnyi</i> sp.nov.				+
<i>Astrothrips globiceps</i> (Karny)		+	+	+
<i>Dorcadothrips trifasciatus</i> (Priesner)			+	
<i>Elixothrips brevisetis</i> (Bagnall)		+		+
<i>Lefroyothrips</i> pr. <i>fasciatus</i> Moulton			+	
<i>Megalurothrips formosae</i> (Moulton)	+		+	+
<i>Megalurothrips usitatus</i> (Bagnall)	+			
<i>Panchaethrips holtmanni</i> Wilson		+		+
<i>Retithrips javanicus</i> Karny			+	
<i>Scirtothrips dorsalis</i> Hood	+			
<i>Selenothrips rubrocinctus</i> (Giard)	+			
<i>Thrips florum</i> Schmutz			+	
<i>Thrips hawaiiensis</i> (Morgan)	+		+	
<i>Thrips leuweni</i> (Priesner)			+	
<i>Zonothrips karnyi</i> Priesner	+			
Phlaeothripidae				
<i>Dexiothrips madrasensis</i> (Ananthkrishnan)				+
<i>Dinothrips sumatrensis</i> Bagnall			+	
<i>Ecacanthothrips andrei</i> Palmer and Mound			+	
<i>Ecacanthothrips tibialis</i> (Ashmead)		+	+	
<i>Elaphrothrips curvipes</i> Priesner	+			+
<i>Ethirothrips stenomelas</i> (F. Walker)		+	+	
<i>Gigantothrips nigrodentatus</i> (Karny)			+	
<i>Haplothrips certus</i> Priesner	+			
<i>Haplothrips ganglbaueri</i> Schmutz	+			
<i>Haplothrips vernoniae</i> Priesner	+			
<i>Holurothrips ornatus</i> Bagnall		+	+	+
<i>Hoplandrothrips flavipes</i> Bagnall			+	
<i>Machatothrips antennatus</i> (Bagnall)			+	
<i>Machatothrips biuncinatus</i> Bagnall			+	
<i>Meiothrips menoni</i> Ananthkrishnan		+	+	
<i>Nesothrips brevicollis</i> (Bagnall)	+	+		+
<i>Nesothrips lativentris</i> (Karny)	+	+	+	+
<i>Plectrothrips eximius</i> Ananthkrishnan	+		+	
<i>Pygothrips vicinus</i> Okajima				+
<i>Strepterothrips orientalis</i> Ananthkrishnan	+			
<i>Streptothrips mirabilis</i> Priesner				+